

**Changing Patterns of Drug Use Among High School Seniors
(1976-1995) Who Entered Military Service: Implications for
Drug Abuse Prevention**

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July 1998



**U.S. Army Research Institute
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19980826 052

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A Directorate of the U.S. Total Army Personnel Command

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Research accomplished under contract
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REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE July 1998		3. REPORT TYPE AND DATES COVERED final
4. TITLE AND SUBTITLE Changing Patterns of Drug Use Among High School Seniors (1976-1995) Who Entered Military Service: Implications for Drug Abuse Prevention			5. FUNDING NUMBERS PE: 0601102A PR: B74F TA: 190 WU: C01 Contract No. DASW01-95-K-005	
6. AUTHOR(S) J. Bachman, P. Freeman-Doan, P. O'Malley, L. Johnston, and D. Segal (University of Michigan)				
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9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Research Institute ATTN: PERI-BR 5001 Eisenhower Avenue Alexandria, VA 22333-5600			10. SPONSORING / MONITORING AGENCY REPORT NUMBER Research Note 98-21	
11. SUPPLEMENTARY NOTES COR: Dr. Joseph Psotka				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for Public Release; Distribution Unlimited			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) Early in the 1980's, the U.S. armed forces adopted "zero tolerance" policies concerning illicit drug use, and later developed policies to discourage tobacco and alcohol abuse. This article examines patterns of drug use among young recruits both before and after enlistment, compared with age-mates who did not enter the military, and documents historical shifts across the past two decades. These analyses employed longitudinal panel data from 20 nationally representative samples of high school seniors (cohorts of 1976-1995). Each surveyed just before graduation, and again one or two years later. Separate analyses for men (N=11,977) and women (N=14,948) contrasted those who at follow-up were (a) in military service, (b) full-time students, (c) in full-time civilian employment. Overall, illicit drug use declined more among military recruits than their civilian counterparts. Further analyses of male recruits at multiple time periods showed sharp declines in (a) prevalence of marijuana, subsequent to initiation of routine military drug testing; (b) proportions of half-pack-a-day or more smokers electing to enter service, subsequent to tobacco bans during basic training. Conclusions suggest that recent military drug policies have had strong deterrent effects.				
14. SUBJECT TERMS Alcohol Cocaine Marijuana National Surveys Cigarettes Drugs Military Students				15. NUMBER OF PAGES 35
				16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT Unlimited	

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Main Title: Changing Patterns of Drug Use Among High School
Seniors (1976-1995) Who Entered Military Service:
Implications for Drug Abuse Prevention

Running Head: Drug Use and Military Service
(or) Drugs in the Military

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Word count for text: 4390 (This includes references.)

Word count for abstract: 184

Tables: 1

Figures: 3

Key Words:	Alcohol	Cigarettes
	Cocaine	Drugs
	Marijuana	Military
	National Surveys	Students

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ABSTRACT

Objectives

Early in the 1980s, the U.S. armed forces adopted "zero tolerance" policies concerning illicit drug use, and later developed policies to discourage tobacco and alcohol abuse. This article examines patterns of drug use among young recruits both before and after enlistment, compared with age-mates who did not enter the military, and documents historical shifts across the past two decades.

Methods

These analyses employed longitudinal panel data from 20 nationally representative samples of high school seniors (cohorts of 1976-1995), each surveyed just before graduation, and again one or two years later. Separate analyses for men ($N = 11,977$) and women ($N = 14,948$) contrasted those who at follow-up were (a) in military service, (b) full-time students, (c) in full-time civilian employment.

Results

Overall, illicit drug use declined more among military recruits than their civilian counterparts. Further analyses of male recruits at multiple time periods showed sharp declines in (a) prevalence of marijuana, subsequent to initiation of routine military drug testing; (b) proportions of half-pack-a-day or more smokers electing to enter service, subsequent to tobacco bans during basic training.

Conclusions

Recent military drug policies have had strong deterrent effects.

ACKNOWLEDGMENTS

The data collections for this research was supported by Research Grant No. R01-DA 01411 from the National Institute on Drug Abuse, United States Public Health Service. The University of Michigan Institutional Review Board approved this study and the consent information provided to the respondents. Additional funding was provided by The Army Research Institute (contract no. MDA903-D-0032, Delivery order no. 0032) through a sub-contract from Human Resources Research Organization (HumRRO). Additional support was provided to the second author under contract DASW0195K005. The views, opinions, and/or findings contained in the paper are those of the authors and should not be construed as an official Department of the Army position, policy, or decision, unless so designated by other official documentation.

We thank Nicole Hitzemann for her gracious assistance in preparing the tables and figures.

INTRODUCTION

Stereotypes of the use of psychoactive substances in military service abound, and extend back through centuries (indeed, millennia). Rations of rum were deemed essential for the morale of soldiers in the American Revolutionary Army, and the picture of the hard-drinking U.S. serviceman has remained¹-- at least until very recently. Similarly, World War I and II GIs were issued cigarettes with their rations and routinely pictured smoking cigarettes. And in Vietnam the use of illicit drugs among military personnel was widespread and widely publicized.^{2,3,4}

In recent years a new and dramatically different picture has emerged concerning drug use in the U.S. armed forces. A policy of "zero tolerance" with respect to illicit drug use is firmly in place, and new policies promoting healthy lifestyles have focused attention on reducing tobacco use and alcohol abuse.⁵⁻¹⁰ Because military service involves a high level of commitment to, and involvement in, a "total institution"¹¹ which strictly organizes many aspects of an individual's lifestyle, these new policies concerning substance use might reasonably be expected to have important impacts on the behaviors of military personnel.

Surveys conducted by the Defense Department have documented decreases in illicit drug use^{12,13} and in cigarette smoking,¹⁴ from 1980 through 1995. However, for purposes of understanding possible impacts of military prevention programs, there are unavoidable limitations to these findings. First, some of the changes in drug use and tobacco use are attributable to changes during that period in the sociodemographic composition of the armed forces.¹² Moreover, there also were broad secular trends--historic shifts--in the use of tobacco and various illicit drugs, especially marijuana and cocaine, during the 1980s;¹⁵ it may be that such secular trends, rather than shifts in military policy, are responsible for at least some of the changes in drug

use by military personnel. Finally, of course, questions may be raised as to the veracity of service personnel's reports of their drug use when responding to Defense Department surveys.

The present research is able to address each of the above limitations, to at least some extent, using nationwide survey data from the Monitoring the Future project. The project is conducted by the University of Michigan, and is not represented to participants as a "government survey." The research tracks respondents longitudinally starting at the end of high school, thereby permitting examination of drug use patterns prior to enlistment. Our analyses also include large non-military comparison groups, thus providing data on broad secular trends.

Earlier analyses of Monitoring the Future panel data covering two decades (1976-1995) have shown overall differences in drug use between those in military service and those in civilian jobs, both before and after extensive controls for marital and parental status, educational status, and living arrangements; however, those earlier analyses did not explore whether drug use patterns linked to military service shifted throughout the past two decades.¹⁶ A central feature of the present research is its focus on changes in military-related drug use patterns during the past two decades.

METHODS

Samples and Survey Methods

This article employs panel data from the Monitoring the Future project, an ongoing nationwide study of youth conducted by the Institute for Social Research under a series of grants from the National Institute on Drug Abuse.^{17,18,15} The project's cohort-sequential design includes (a) self-completed questionnaires group-administered to nationally representative samples of high school seniors in the spring of each year, beginning with the class of 1975 and continuing with each class thereafter (average response rates of 83 percent); and (b) follow-up surveys mailed to subsamples (2,400 individuals) from each senior class. The first follow-up surveys of each class are sent either one year (for a random half of each sample) or two years after graduation (average response rates of 80 percent). Panel analyses including later follow-up surveys, which occur at two-year intervals, have been reported in other publications;^{18,19} data from the later follow-ups were not needed in the present analyses.

Drug Use Measures

Among the large set of self-report drug use measures included in the Monitoring the Future surveys, the following four prevalence measures were selected for examination here: (a) half-pack or more daily cigarette use (during the past 30 days), (b) consumption of five or more alcoholic drinks in a row on at least one occasion during the past two weeks, (c) any use of marijuana during the past 30 days, and (d) any use of cocaine during the past 30 days. Although data are also available for use during the past 12 months for the two illicit drugs, we felt that the current (past month) data would be more sensitive to changes. All of these measures are described in detail in other publications.^{20,15}

Subgroups Examined

Our purpose is to examine patterns of change in drug use when young adults enter military service, and how those patterns may have changed throughout the two decades since 1976. The panel data reported here can be characterized as largely representative of young military enlistees, with the following limitations: (a) within each follow-up cohort, enlistees constitute relatively small numbers of men and very small numbers of women, and the small numbers limit the reliability of point estimates; (b) panel attrition is slightly greater among drug users, so very modest reweightings were incorporated in the analyses to avoid underestimating drug use, particularly cigarette use;¹⁵ (c) there is evidence that those in military service are somewhat more likely than average to underreport past illicit drug use, and perhaps also their more recent use, but the evidence suggests that such effects are relatively modest.²¹ Thus, limitations notwithstanding, the panel data permit useful contrasts between modest sized samples representative of most enlistees and larger samples of relevant comparison groups.

As discussed elsewhere,^{16,19} most graduates choose either college or civilian employment as their next primary activity after high school, with small proportions of men and very small proportions of women choosing military service. Accordingly, in this paper focusing on young graduates in military service, we chose as comparison groups those in full-time education, and those in full-time employment. Prior analyses of Monitoring the Future panel data^{18,22} have found substantial differential changes in drug use rates linked to living arrangements, particularly leaving parents' home. Virtually all of those in the military subsamples had left the parental home, but for the comparison groups it was useful to make further distinctions according to whether or not they were still living with their parents at the time of follow-up.

These analysis decisions yielded subgroups and total (weighted) numbers of young (modal age 19-20) high school graduates as shown in Table 1. The left side of the table combines 20 graduating classes (1976-1995), and presents data separately for men and women. The right portion of the table shows data for men separated into five groupings of four graduating classes each (1976-1979, 1980-1983, 1984-1987, 1988-1991, 1992-1995). The numbers of women enlistees were too small to justify a similar breakdown in this article, but the data are available elsewhere.²³

Statistical Analyses

For each of the four drug use dimensions, we computed three scores for each individual: (a) "Before" (i.e., end of the senior year of high school) drug use, coded "1" (use) or "0" (non-use at the specified level); (b) "After" (i.e., one or two years after high school) drug use, similarly coded "1" or "0"; and (c) "Change," calculated as the "After" score minus the "Before" score (with "-1", "0", and "+1" as possible scores). Analyses were carried out separately for men and women. Significance tests were conducted contrasting the military enlistee subgroup with each of the other subgroups, on all three scores (Before, After, and Change) for each of the four substance use measures. The Dunnett test was calculated with a significance level set at .05, two-tailed. The Dunnett test is appropriate because it is designed to hold the maximum experimentwise error rate involved in multiple comparisons to a level less than or equal to .05.²⁴ Unless otherwise stated, all differences and contrasts discussed in the text are significant; a detailed reporting of significance tests and percentage values corresponding to Figures 1-3 is available elsewhere.²³

RESULTS

Drug Use of Men and Women across Total Time Period

Figure 1 presents prevalence rates for all four types of drug use, shown separately for men and women across all 20 graduating classes combined (classes of 1976-1995). Those who entered military service were about two and one-half times as likely to be half-pack-a-day cigarette smokers as those who entered college. This was true at the end of high school, and remained true one to two years later. Smoking rates for those who entered the military were fairly similar to those who entered full-time civilian employment after leaving high school. The figure also shows, for all subgroups, substantial increases in proportions smoking more than a half-pack per day. This reflects the fact that many who were regular smokers during the high school years increase their amount of consumption soon after graduation, often crossing the half-pack threshold.¹⁸

Prevalence of occasional heavy drinking, defined as consuming five or more drinks in a row at least once during the preceding two weeks, increased somewhat among young men who entered military service, and more markedly among those who left home to enter college. The difference between these two groups is due primarily to the larger proportion of married men in military service; separate analyses limited to those not married at the time of the follow-up showed larger increases in occasional heavy drinking among servicemen, nearly equal to the college group.²³ The drinking data for the small number of women who entered military service do not replicate those for men; there was little overall change, which contrasts with the sharp increase among women who left home to go to college.

Figure 1 also shows that, for both men and women throughout most of the past two

decades, prevalence of marijuana use dropped sharply after military enlistment, and prevalence of cocaine use decreased somewhat. Among men, the change in marijuana prevalence among enlistees was significantly different from (more negative than) the changes for any of the comparison groups; similarly, marijuana change scores among the small number of female enlistees were more negative than any of the comparison subgroups (all comparisons except one were statistically significant). The cocaine patterns, although broadly consistent with those for marijuana, involved relatively low prevalences and many comparisons did not reach statistical significance.

Overall, Figure 1 shows gender similarities in some respects and gender differences in other respects. In general, the overall patterns of change between base-year and follow-up are fairly closely parallel between men and women across all subgroups, suggesting that the factors contributing to change are largely similar across genders. However, overall prevalence rates differ importantly, with somewhat more men than women reporting marijuana use and cocaine use, and substantially more men reporting instances of heavy drinking (consistent with gender differences, on average, in the impact of five or more drinks in a row). This illustrates why analyses that simply combined men and women would be inappropriate: the military subgroup would show misleadingly high levels of heavy drinking, for example, simply because it consists of about 87 percent men, in contrast to the other groups all consisting of more equal proportions of women and men.

Changing Patterns of Drug Use Among Men in Military Service

The upper portion of Figure 2 shows that half-pack or more per day consumption of cigarettes declined among the total samples of young men (shaded lines) from the mid-1970s

through the mid-1980s (equally true for base year and follow-up), and then showed relatively little change thereafter. Among young male enlistees, however, the change across time was more dramatic. Specifically, during the first three time intervals (covering the high school classes of 1976-1987, with follow-up surveys in 1977-1989), half-pack smoking rates among young male enlistees were roughly half again as large as the average rates for all young men; however, during the last two intervals (classes of 1988-1995, follow-ups in 1989-1997), smoking rates among male enlistees were just about equal to the overall averages for men. Importantly, Figure 2 also shows that this abrupt shift reflected selection factors, i.e., a decline in the proportions of smokers among recruits, rather than any sort of socialization factors causing a decline in smoking after entry. Indeed, half-pack smoking rates increased at least as much among men who entered military service as among those who entered other walks of life. But from the late 1980s onward, the military no longer attracted disproportionate numbers of young men who had been half-pack-a-day smokers before they left high school.

The lower portion of Figure 2 shows that instances of heavy drinking declined among young men in general during the past two decades, and the same was true for military recruits. For the first three time intervals, the data for military recruits were fairly similar to the data for young men who left home to go to college; however, in the last two intervals the recruits did not show increases of the sort shown by the students who had left home (change scores significantly different for the last interval only).

Figure 3 shows that illicit drug use among young enlistees shifted substantially over the past two decades. The findings are mostly parallel for the two illicit drugs shown, although the patterns are more pronounced for the widely used drug marijuana than for cocaine. Marijuana use

among the total samples of young men (shaded lines in Figure 3, upper portion) declined substantially during the 1980s, but the shifts in marijuana use among young enlistees were far more pronounced than the general downward secular trend. During the senior year of high school, young men who would soon enter military service were just about as likely as their classmates to have used marijuana during the month preceding the survey; however, from 1981 onward, marijuana use dropped dramatically after enlistment, in contrast to the post-high school use rates for all of the comparison groups (of 16 change score comparisons, matching military enlistees with four comparison groups at each of four time periods, 13 showed significant differences). The patterns for cocaine prevalence were similar, as noted above; however, the overall use levels for all groups were quite low, and most differences fell short of statistical significance.

DISCUSSION

The analyses of young men and women reported here, employing panel data from the Monitoring the Future project and focusing specifically on changes in substance use among those who enter military service during the first year or two after high school (see Figure 1), provide results broadly consistent with earlier analyses of Monitoring the Future data covering up to fourteen years after high school.¹⁸ The additional analyses focusing on young men at multiple time periods (Figures 2 and 3) yield important new insights by documenting how substance use among military recruits has changed during the past two decades. As we discuss below, the patterns differ by substance, and in ways that seem to be the direct results of recently adopted military policies designed to discourage substance use.

Illicit drug use, especially marijuana use, showed striking declines among young men who enlisted in military service during the 1980s, a time when such use also declined for the population as a whole. The present study, however, is able to demonstrate that the declines among those in military service were far more pronounced than the declines among their civilian counterparts, and this seems directly attributable to new policies and practices, most notably the introduction of drug testing. In 1980 all branches of the armed forces began mandatory routine urinalysis testing for opiates, barbiturates, amphetamines, and cocaine. In late 1981 a program of urinalysis testing for illicit drugs, including marijuana, using portable testing units was initiated by the Navy; the program soon was expanded to include all service personnel randomly tested every year and testing of all recruits during the accession process.⁵ Recruits who test positive are not permitted to enter the military, but may reapply after a six month waiting period.

There has been much debate about the relative merits of "supply reduction" and "demand

reduction" as alternative (but not incompatible) strategies for reducing illicit drug use.²⁵ Although demand reduction generally refers to a reduction in the extent to which individuals "choose" to use drugs, that leaves open many possible pathways toward reaching such choices -- including pathways involving fairly strong coercion. Potential recruits are explicitly warned that they will be tested periodically for illicit drug use and that discovery of such use is grounds for dismissal. Furthermore, in a total institution like the military service, monitoring can be extensive and a broad range of life consequences affected. Under these special circumstances, which we might describe as "coerced demand reduction," our data show that very high proportions of servicemen and servicewomen have "chosen" not to use illicit drugs, consistent with other analyses focussed on Navy personnel.⁶

The findings for instances of heavy drinking (five or more drinks in a row reported at least once in the past two weeks) suggest some modest improvement in the military services over the past two decades. However, the improvement is no greater than the downward secular trend for young men in general, which probably reflects both the increases in state minimal drinking ages during that period plus growing concern and publicity concerning the risks of drunk driving.^{26,27} It continues to be true that among young men entering military service, like those who leave home to go to college, prevalence of occasional heavy drinking increases somewhat more than average.

Half-pack-a-day smoking prevalence among male recruits shifted sharply in the late 1980s. In the late 1970s young men entering military service looked much like those entering civilian employment in terms of their cigarette use, and were about three times as likely to be half pack or more smokers compared with those headed to college. Smoking rates for all subgroups dropped during the next decade as a result of some important overall cohort related changes,¹⁵ but the

relationships among these subgroups remained much the same--the armed services continued to recruit disproportionate (i.e., above average) numbers of half-pack or more smokers. However, beginning in the mid-1980s, the armed forces adopted a series of reforms designed to reduce tobacco use among military personnel. Smoking cessation courses were offered to all service persons, smoke-free building policies were established, and cigarette prices at post commissaries were increased; most importantly, beginning in 1989, all new recruits were required to be tobacco-free during the basic training period.^{9,10,28,29} Clearly these actions, taken by the Office of the Assistant Secretary of Defense for Health Affairs, other DoD agencies, and base commands, have changed the institutional culture of the military regarding tobacco, and by the late 1980s that change was probably communicated quite clearly to most prospective recruits--particularly those who were already regular smokers. Of course, a correspondence among historic events is not sufficient to demonstrate causation; nevertheless, the abrupt shift in military smoking rates as illustrated in Figure 2, coinciding so closely with the newly imposed restrictions on tobacco use during the six or eight week period of basic training, is at least strongly suggestive.

It is instructive to contrast the two kinds of change illustrated in these data--those involving the illicit drugs, especially marijuana, and those involving smoking. For both types of substance, (a) major departures from general historical patterns (secular trends) occurred; and (b) although they occurred at somewhat different times, the changes in drug use corresponded closely with dramatic (some might say draconian) shifts in military policies. The nature of the changes differed between substances, however, and in ways that illustrate the different levels of dependency involved, on average.

Throughout the period under study, most high school seniors who reported any marijuana

use during the past 30 days used it roughly once a week, and fewer than one in four reported 20 or more uses (i.e, used on a daily basis or nearly so).¹⁵ As shown in Figure 3, it appears that beginning early in the 1980s nearly all those who used marijuana near the end of their senior year in high school were able to stop such use if they entered the armed forces.

In contrast, those who were half-pack smokers by the end of high school were deeply involved (generally ten times or more per day) in a highly habit-forming behavior. When confronted with the prospect of a tobacco-free basic training experience, it appears that many regular smokers were deterred from entering the armed forces (and perhaps some others entered briefly, only to discover first-hand that they could not in fact meet the tobacco-free basic training requirement). So, whereas the changes in marijuana use associated with military service fit a socialization pattern in which individuals change their behaviors in response to new social situations, the changes involving smoking appear to reflect primarily "selection" rather than individual change. Moreover, Figure 2 suggests that the smoking habit is deeply enough ingrained that most smokers who make it through basic training quickly return to the habit, and these findings are consistent with a recent study of over 3,000 Air Force recruits which found that after being forced to abstain during basic training 74 percent of tobacco users returned to use within 90 days.³⁰

In sum, it appears that efforts by the armed forces to prevent illicit drug use are having considerable success. The story for legally available substances is more complicated. Reducing occasional heavy drinking remains a difficult challenge facing the armed forces, given the extent to which being able to "hold one's liquor" is part of the stereotype of the typical military man. Efforts to reduce tobacco use in the military seem to have made enlistment less attractive to those

who are already regular (i.e., half-pack-a-day or more) smokers before the end of high school; however, much room for improvement remains among those smokers who do enlist.

REFERENCES

1. Ingraham LH. The boys in the barracks. Philadelphia, PA: Institute for the Study of Human Issues; 1984.
2. Reinstein M. Drugs and the military physician. *Mil Med* 1972; 137(3): 122-125.
3. Segal D. Illicit drug use in the U.S. Army. *Soc Sympos* 1977; 18:66-83.
4. Stanton MD. Drugs, Vietnam, and the Vietnam veteran: An overview. *Am J Drug Alcohol Abuse* 1976; 3(4):557-570.
5. Bray RM, Marsden ME, Herbold JR, Peterson MR. Progress toward eliminating drug and alcohol abuse among U.S. military personnel. *Armed Forces & Society* 1992; 18:476-496.
6. Borack JJ. An estimate of the impact of drug testing on the deterrence of drug use. *Mil Psychol* 1998; 10:17-25.
7. Department of Defense. Alcohol and drug abuse of DoD personnel. Directive no. 1010.4. Washington: The Department; 1980.
8. Department of Defense. Drug abuse testing program. Directive no. 1010.1. Washington: The Department; 1984.
9. Department of Defense. Smoking and health in the military. Washington: The Department; 1986a.
10. Department of Defense. Health promotion. Washington: The Department; 1986b.
11. Goffman E. Asylums, essays on the social situation of mental patients and other inmates. Chicago: Aldine; 1961.
12. Bray RM, Kroutil LA, Marsden ME. Trends in alcohol, illicit drug, and cigarette use among U.S. military personnel: 1980-1992. *Armed Forces & Society* 1995; 21:271-293.

13. Bray RM, Kroutil LA, Wheelless SC, Marsden ME, Bailey SL, Fairbank JA, et al. 1995
Department of Defense survey of health related behaviors among military personnel, (DoD
Contract No. DASWO1-94-C-0140). Research Triangle Park: Research Triangle Institute;
1995.
14. Kroutil LA, Bray RM, Marsden ME. Cigarette smoking in the U.S. military: Findings from
the 1992 worldwide survey. *Prev Med* 1995; 23(4):521-528.
15. Johnston LD, O'Malley PM, Bachman JG. National survey results on drug use from the
Monitoring the Future study, 1975-1995. Volume I: Secondary school students. (NIH
Publication No. 96-4139) and Volume II: College students and young adults. (NIH
Publication No. 98-4140). Rockville (MD): National Institute on Drug Abuse; 1996, 1997.
16. Bachman JG, Freedman-Doan P, Segal D, O'Malley PM. Trends in military propensity and
the propensity-enlistment relationship. (Monitoring the Future Occasional Paper No. 40).
Ann Arbor (MI): Institute for Social Research; 1997.
17. Bachman JG, Johnston LD, O'Malley PM. The Monitoring the Future Project after twenty-
two years: Design and procedures. (Monitoring the Future Occasional Paper No. 38). Ann
Arbor (MI): Institute for Social Research; 1996.
18. Bachman JG, Wadsworth KN, O'Malley PM, Johnston LD, Schulenberg, JE. Smoking,
drinking, and drug use in young adulthood: The impacts of new freedoms and new
responsibilities. Mahwah (NJ): Lawrence Erlbaum; 1997.
19. Bachman JG, Segal D, Freedman-Doan P, O'Malley PM. Military propensity and the
propensity-enlistment relationship. *Armed Forces & Society* Fall 1998; 25(1).
20. Johnston LD, Bachman JG, O'Malley PM. Monitoring the future: Questionnaire responses

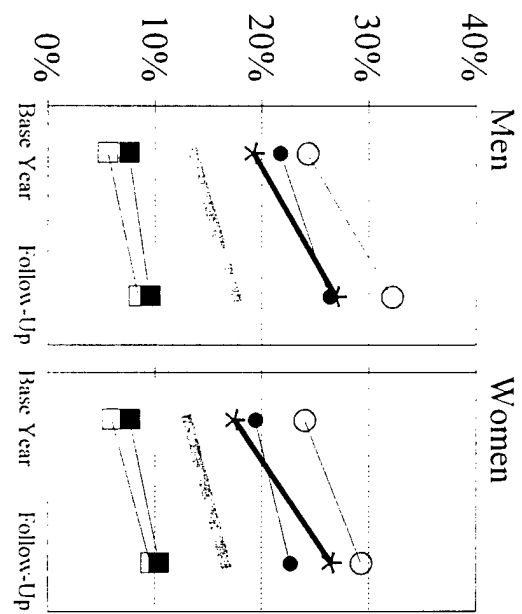
- from the nation's high school seniors, 1995. Ann Arbor (MI): Institute for Social Research; 1997.
21. Johnston LD, O'Malley PM. The recanting of earlier reported drug use by young adults. In: Harrison, L, Hughes A, editors. The validity of self-reported drug use: Improving the accuracy of survey estimates. Rockville (MD): National Institute on Drug Abuse; 1997. p.59-80.
 22. Bachman JG, O'Malley PM, Johnston LD. Drug use among young adults: The impacts of role status and social environments. J Pers Soc Psychol 1984; 47:629-645.
 23. Bachman JG, Freedman-Doan P, O'Malley PM, Johnston, LD, Segal D. Comparing drug using behaviors among high school graduates entering military service, college, and civilian employment. (Monitoring the Future Occasional Paper No. 42). Ann Arbor (MI): Institute for Social Research; in preparation.
 24. Dunnett CW. A multiple comparisons procedure for comparing several treatments with a control. J Am Stat Assoc 1955; 50:1096-1121.
 25. Kleber H. Our current approach to drug abuse: Progress, problems, proposals. N Eng J Med 1994; 330(5):361-365.
 26. Berger DE, Marelich WD. Legal and social control of alcohol-impaired driving in California: 1983-1994. J Stud Alcohol 1997; 58:518-523.
 27. O'Malley PM, Wagenaar AC. Effects of minimum drinking age laws on alcohol use, related behaviors, and traffic crash involvement among American youth: 1976-1987. J Stud Alcohol 1991; 52:478-491.
 28. Department of Defense. Department of Defense updated report on smoking and health in the

military. Washington: The Department; 1987. Prepared by the Office of the Assistant Secretary of Defense [Health Affairs].

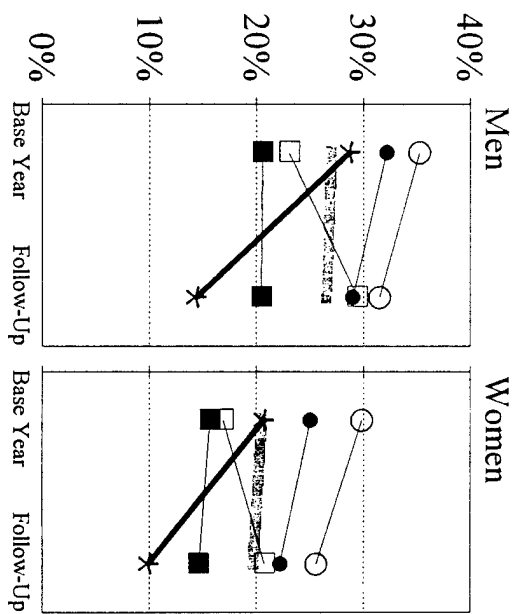
29. Department of Defense. Smoke-free workplace. Instruction No. 1010.15. Washington: The Department; 1994.
30. Williams L, Gackstetter G, Fiedler E, Hermes C. Prevalence of tobacco use among first-term air force personnel before and after basic military training. *Mil Med* 1996; 161(6): 318-323.

Figure 1. Prevalence of Substance Use by Gender (1976-1995, combined)

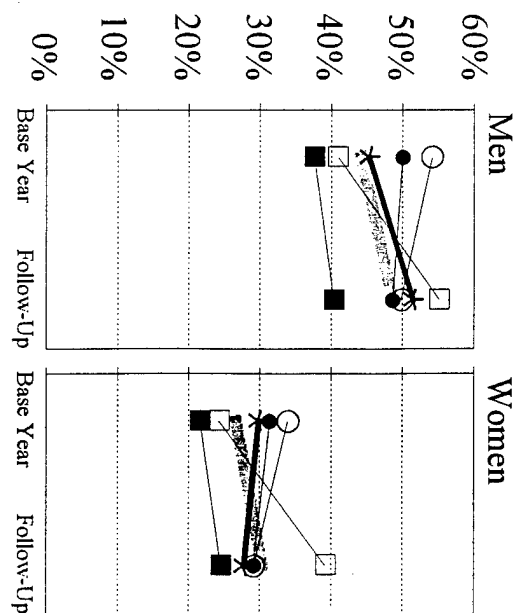
≥ 1/2 pack cigarettes daily



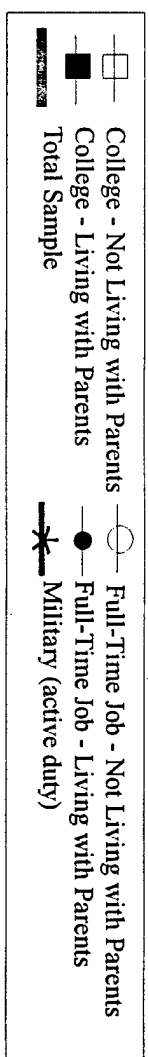
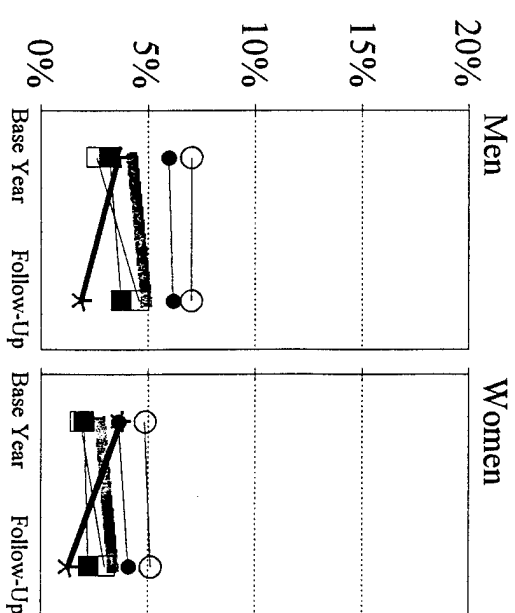
Marijuana: 30 day use



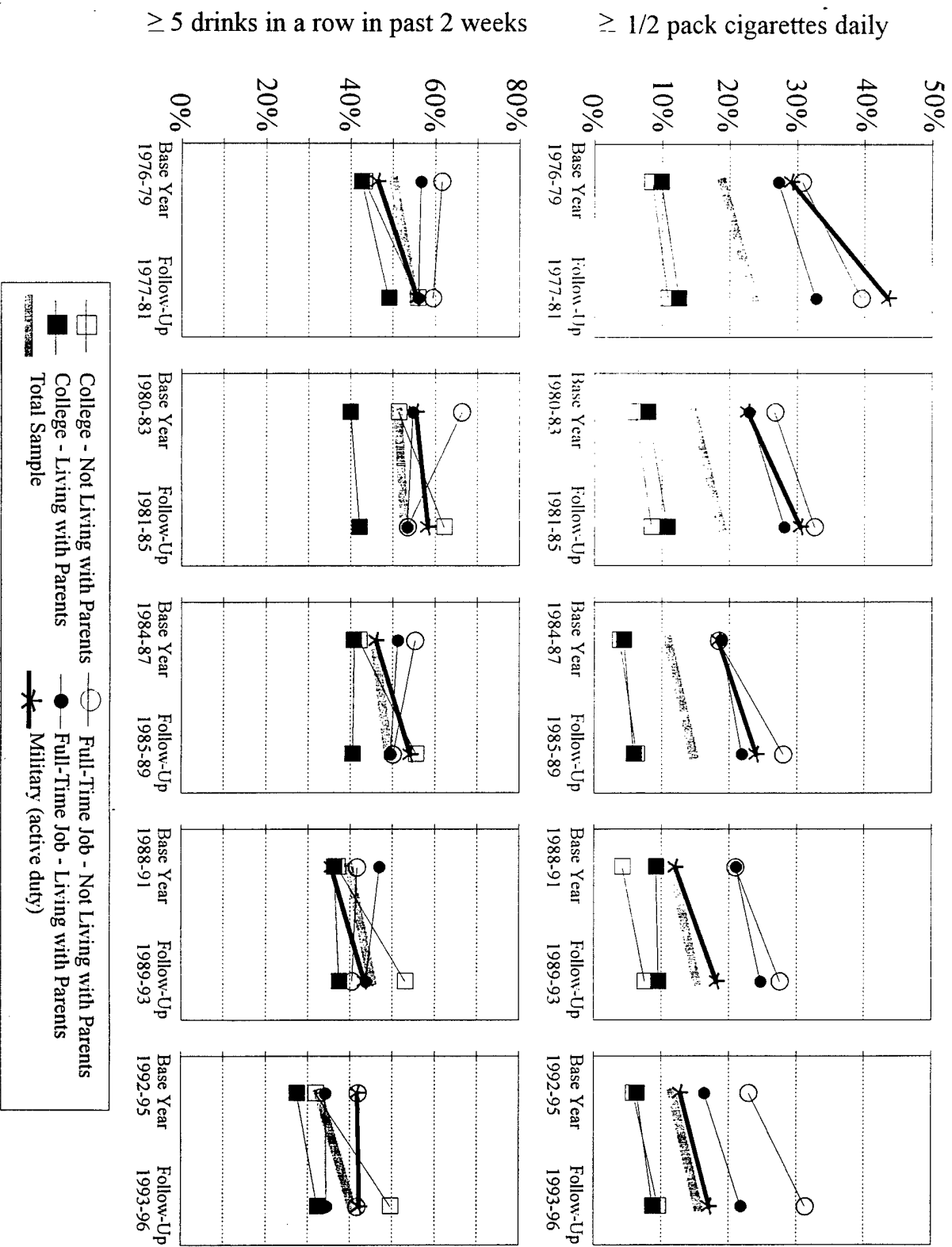
≥ 5 drinks in a row in past 2 weeks



Cocaine: 30 day use



**Figure 2. Changes in Prevalence of Smoking and Heavy Drinking
Among Men in Different Time Periods**



**Figure 3. Changes in Prevalence of Illegal Drug Use
Among Men in Different Time Periods**

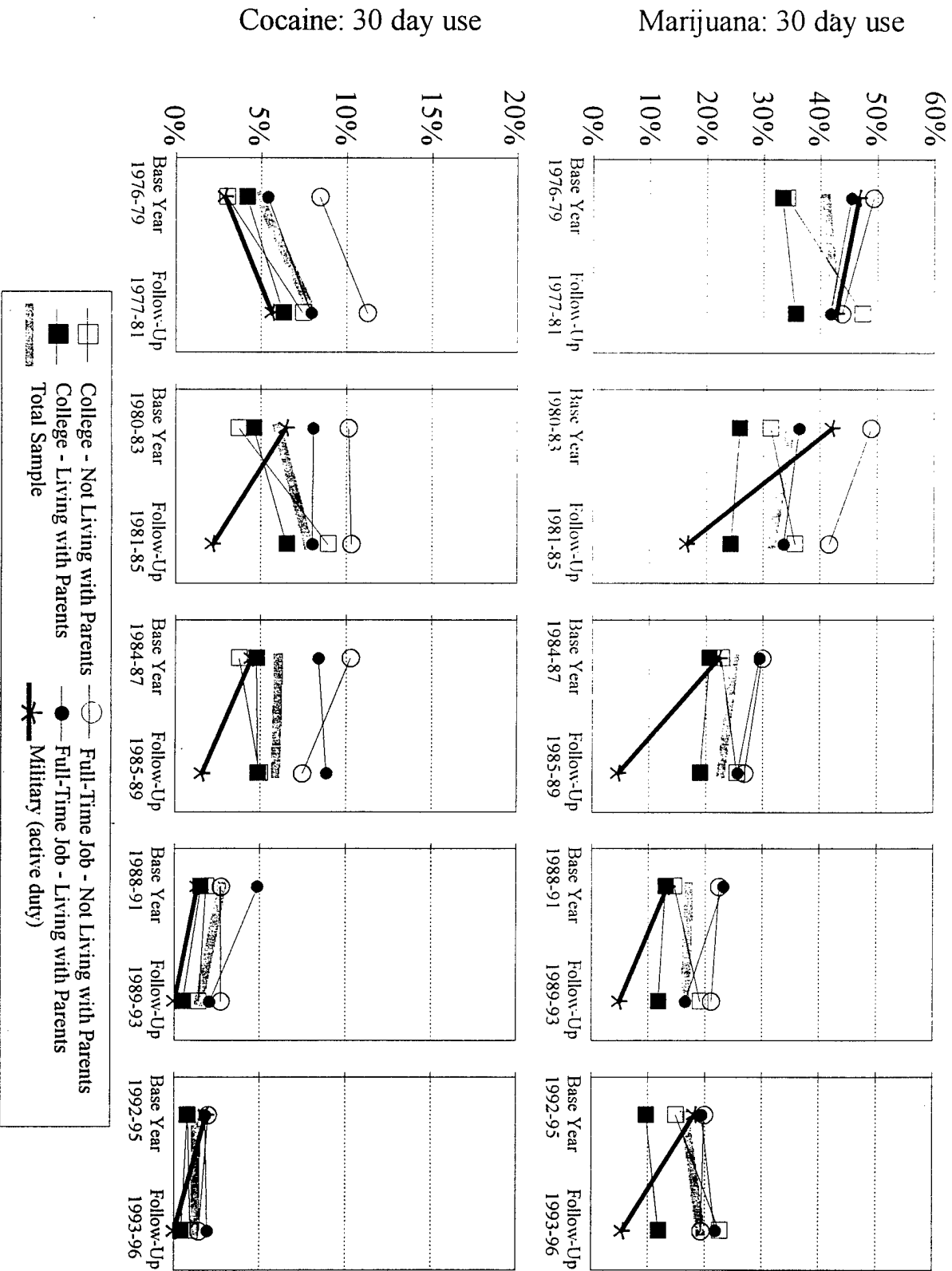


Table 1
Cases Available by Sex and Class Year Groupings^a

	1976-1995		1976-1995		1976-1979	1980-1983	1984-1987	1988-1991	1992-1995
	Males	Females	Males	Females	Males	Males	Males	Males	Males
Military ^b	781	161	138	177	197	173	96		
Full-Time Job/Living with Parents	2252	2163	539	482	494	410	327		
College/Living with Parents	2244	2959	432	486	448	487	391		
Full-Time Job/Not Living Parents	884	1430	220	169	184	162	149		
College/Not Living Parents	3639	4680	671	710	705	865	689		
Other	2176	3556	363	501	416	506	390		
Total	11,977	14,948	2,364	2,524	2,444	2,603	2,042		

^aAll cases are weighted to adjust for differential selection probabilities and for differential panel attrition rates by drug use. The actual number of cases is slightly higher. The cases presented here are for the heavy drinking item. All other drug questions have slightly higher response rates.

^bRespondents are assigned to these categories sequentially. First, those who were serving in the active duty armed forces were coded "military". The remaining respondents were coded as "others". Next, among the pool of "others" those who had a full-time job and were living with their parents were identified and so coded. That coding process was repeated for each of the classifications used in these analyses.

Occupation/Living Arrangements and Drug Use

Males 5+ Drinks in Past 2 Weeks Dichotomy

	College / Live without Parents	College / Live with Parents	Full-Time Job / Live without Parents	Full-Time Job / Live with Parents	Military - Active Duty	Other	Total
1976-1979							
BY	43.26%	42.55%	61.55% *	56.59% *	46.38%	56.49%	50.09%
FU	55.96%	49.04%	59.45%	55.99%	55.75%	54.59%	54.80%
CHANGE	12.70%	6.49%	-2.09%	-0.60%	9.38%	-1.90% *	4.71%
N	836	534	344	786	176	523	3,199
1980-1983							
BY	51.39%	39.94% *	66.32%	54.70%	55.43%	51.63%	51.15%
FU	62.19%	42.07% *	53.44%	53.40%	58.23%	46.33% *	52.63%
CHANGE	10.80%	2.13%	-12.88% *	-1.30%	2.80%	-5.30%	1.48%
N	883	617	273	684	245	698	3,400
1984-1987							
BY	42.01%	40.79%	55.28%	51.17%	45.94%	45.71%	45.58%
FU	55.62%	40.56% *	50.06%	49.46%	54.16%	42.77% *	48.89%
CHANGE	13.60%	-0.22%	-5.22% *	-1.70% *	8.22%	-2.94% *	3.31%
N	841	539	261	643	245	533	3,062
1988-1991							
BY	37.05%	36.22%	41.68%	46.93% *	35.47%	42.69%	39.73%
FU	53.08% *	37.42%	40.41%	43.72%	43.35%	42.25%	45.14%
CHANGE	16.03%	1.19%	-1.28%	-3.21% *	7.88%	-0.43%	5.41%
N	979	562	218	525	196	605	3,085
1992-1995							
BY	31.95%	27.41% *	41.90%	34.16%	41.67%	32.02%	32.63%
FU	49.61%	32.29%	41.59%	34.38%	42.17%	36.26%	40.37%
CHANGE	17.66% *	4.88%	-0.30%	0.22%	0.50%	4.24%	7.74%
N	767	442	186	397	117	471	2,380
1976-1995							
BY	40.99% *	37.63% *	54.20% *	49.98% *	45.33%	45.72%	44.16%
FU	55.22%	40.40% *	49.85%	48.63%	51.50%	44.27% *	48.58%
CHANGE	14.24% *	2.78%	-4.35% *	-1.35% *	6.17%	-1.44% *	4.41%
N	4,306	2,694	1,282	3,035	979	2,830	15,126

* indicates significance at the 0.05 level from those in active military duty

Occupation/Living Arrangements and Drug Use

Males 30 Day Marijuana Dichotomy

	College / Live without Parents	College / Live with Parents	Full-Time Job / Live without Parents	Full-Time Job / Live with Parents	Military - Active Duty	Other	Total
1976-1979							
BY	34.16% *	33.33% *	49.30%	45.43%	46.72%	47.21%	40.87%
FU	47.40%	35.64%	43.78%	41.77%	42.77%	42.93%	42.66%
CHANGE	13.24% *	2.30%	-5.52%	-3.66%	-3.95%	-4.27%	1.79%
N	829	533	361	822	183	533	3,261
1980-1983							
BY	31.32% *	25.88% *	48.93%	36.33%	42.04%	38.85%	34.70%
FU	35.60% *	24.28%	41.59% *	33.57% *	16.56%	32.39% *	31.45%
CHANGE	4.28% *	-1.60% *	-7.34% *	-2.75% *	-25.48%	-6.46% *	-3.25%
N	899	631	273	709	250	729	3,491
1984-1987							
BY	22.70%	20.63%	29.85%	29.38%	22.33%	27.37%	25.02%
FU	25.48% *	19.01% *	26.78% *	25.58% *	4.53%	24.57% *	22.63%
CHANGE	2.78% *	-1.62% *	-3.07% *	-3.80% *	-17.80%	-2.80% *	-2.40%
N	854	551	282	660	248	558	3,153
1988-1991							
BY	14.58%	13.02%	22.43% *	23.16% *	13.30%	19.63%	17.11%
FU	19.18% *	11.76%	21.11% *	16.45% *	4.88%	18.56% *	16.43%
CHANGE	4.61% *	-1.26%	-1.32%	-6.71%	-8.42%	-1.07%	-0.68%
N	1,002	574	233	563	205	644	3,221
1992-1995							
BY	14.87%	9.61%	19.89%	19.43%	18.09%	21.85%	16.49%
FU	22.64% *	11.83%	19.32% *	21.83% *	5.41%	22.10% *	19.25%
CHANGE	7.77% *	2.22% *	-0.56% *	2.40% *	-12.68%	0.25% *	2.76%
N	793	472	204	426	125	508	2,528
1976-1995							
BY	23.07%	20.59%	35.20%	32.14%	28.68%	30.50%	27.01%
FU	29.45% *	20.48% *	31.47% *	28.98% *	14.33%	27.57% *	26.52%
CHANGE	6.38% *	-0.10% *	-3.73% *	-3.16% *	-14.35%	-2.93% *	-0.49%
N	4,377	2,761	1,353	3,180	1,011	2,972	15,654

* indicates significance at the 0.05 level from those in active military duty

Occupation/Living Arrangements and Drug Use

Males 30 Day Cocaine Dichotomy

	College / Live without Parents	College / Live with Parents	Full-Time Job / Live without Parents	Full-Time Job / Live with Parents	Military - Active Duty	Other	Total
1976-1979							
BY	3.00%	4.16%	8.42% *	5.37%	2.87%	6.64%	4.83%
FU	7.46%	6.29%	11.21%	7.92%	5.64%	9.95%	7.98%
CHANGE	4.46%	2.13%	2.79%	2.55%	2.77%	3.31%	3.16%
N	844	545	363	833	188	549	3,322
1980-1983							
BY	3.71%	4.59%	10.13%	8.05%	6.45%	6.65%	5.94%
FU	8.95% *	6.52%	10.29% *	8.01% *	2.17%	8.11% *	7.75%
CHANGE	5.24% *	1.93% *	0.16%	-0.03%	-4.28%	1.46% *	1.81%
N	911	640	289	729	257	762	3,588
1984-1987							
BY	3.75%	4.76%	10.25% *	8.37%	4.45%	7.15%	6.04%
FU	4.98%	4.85%	7.45% *	8.83% *	1.56%	6.10% *	5.86%
CHANGE	1.22%	0.09%	-2.80%	0.46%	-2.89%	-1.05%	-0.18%
N	863	561	289	673	253	561	3,200
1988-1991							
BY	1.86%	1.54%	2.72%	4.86% *	1.33%	4.18%	2.76%
FU	1.42%	0.52%	2.73%	2.07%	0.00%	2.09%	1.48%
CHANGE	-0.44%	-1.02%	0.01%	-2.78%	-1.33%	-2.10%	-1.28%
N	1,022	589	228	563	205	648	3,255
1992-1995							
BY	0.80%	0.77%	1.99%	1.81%	1.88%	1.82%	1.30%
FU	0.95%	0.41%	1.47%	1.93%	0.00%	1.97%	1.20%
CHANGE	0.15%	-0.36%	-0.52%	0.12%	-1.88%	0.15%	-0.10%
N	790	473	206	432	128	512	2,541
1976-1995							
BY	2.59%	3.19%	7.02% *	5.97% *	3.60%	5.29%	4.25%
FU	4.58% *	3.75%	7.02% *	6.17% *	1.87%	5.51% *	4.91%
CHANGE	1.99% *	0.55% *	0.00%	0.20%	-1.73%	0.22%	0.66%
N	4,430	2,808	1,375	3,230	1,031	3,032	15,906

* indicates significance at the 0.05 level from those in active military duty

Occupation/Living Arrangements and Drug Use

Female Totals (1976-1995)

	College / Live without Parents	College / Live with Parents	Full-Time Job / Live without Parents	Full-Time Job / Live with Parents	Military - Active Duty	Other	Total
1/2 PK CIGARETTES							
BY	5.99% *	7.65% *	24.03% *	19.38%	17.48%	17.61%	12.99%
FU	9.63% *	10.41% *	29.31%	22.67%	26.50%	21.14%	16.59%
CHANGE	3.64% *	2.76% *	5.28%	3.29% *	9.02%	3.53% *	3.60%
N	5,476	3,563	1,996	2,921	206	4,744	18,906
5+DRINKS/2WKS							
BY	24.30%	21.64% *	33.92%	31.35%	29.77%	27.73%	26.59%
FU	39.23% *	24.55%	29.13%	29.12%	27.73%	24.68%	30.31%
CHANGE	14.93% *	2.91%	-4.79%	-2.23%	-2.04%	-3.05%	3.72%
N	5,418	3,462	1,943	2,798	200	4,514	18,335
MARIJUANA - 30DAY							
BY	16.91%	15.66%	29.84% *	25.00%	20.62%	22.63%	20.48%
FU	20.76% *	14.62%	25.56% *	22.20% *	9.90%	19.09% *	19.68%
CHANGE	3.86% *	-1.04% *	-4.28%	-2.80% *	-10.72%	-3.54% *	-0.80%
N	5,508	3,591	1,971	2,896	206	4,695	18,867
COCAINE - 30DAY							
BY	1.83%	2.01%	4.84%	3.61%	3.70%	3.14%	2.75%
FU	3.00%	2.23%	5.12% *	4.10%	1.26%	3.73%	3.36%
CHANGE	1.17% *	0.22%	0.28%	0.48%	-2.44%	0.59%	0.62%
N	5,548	3,636	2,002	2,948	209	4,779	19,122

* indicates significance at the 0.05 level from those in active military duty

Occupation/Living Arrangements and Drug Use

Males Half-Pack or More of Cigarettes per Day Dichotomy

	College / Live without Parents	College / Live with Parents	Full-Time Job / Live without Parents	Full-Time Job / Live with Parents	Military - Active Duty	Other	Total
1976-1979							
BY	8.50% *	9.85% *	30.78%	27.25%	29.13%	22.67%	18.85%
FU	10.93% *	12.51% *	39.52%	32.78% *	43.50%	25.93% *	23.56%
CHANGE	2.43% *	2.66% *	8.74%	5.54% *	14.37%	3.27% *	4.70%
N	830	537	366	823	191	546	3,293
1980-1983							
BY	6.08% *	7.97% *	26.73%	22.90%	22.66%	17.27%	14.60%
FU	8.45% *	10.85% *	32.59%	28.15%	30.50%	22.45% *	18.84%
CHANGE	2.37% *	2.88%	5.86%	5.25%	7.84%	5.18%	4.24%
N	885	626	285	699	254	733	3,482
1984-1987							
BY	3.79% *	4.37% *	18.41%	18.74%	18.36%	12.98%	10.90%
FU	6.32% *	5.88% *	28.05%	21.86%	24.02%	18.23%	14.66%
CHANGE	2.53%	1.51%	9.64%	3.12%	5.65%	5.25%	3.76%
N	858	551	283	671	249	559	3,171
1988-1991							
BY	4.26% *	9.20%	20.96% *	21.04% *	12.07%	15.46%	11.72%
FU	7.58% *	9.57% *	27.56% *	24.71%	18.19%	19.81%	15.16%
CHANGE	3.32%	0.37%	6.61%	3.66%	6.12%	4.36%	3.44%
N	1,005	582	234	546	206	641	3,214
1992-1995							
BY	5.88%	6.39%	22.97% *	16.41%	12.80%	17.01%	11.58%
FU	9.58%	8.78%	31.32% *	21.82%	17.12%	19.47%	15.46%
CHANGE	3.70%	2.39%	8.35%	5.41%	4.32%	2.46%	3.88%
N	792	465	204	427	127	513	2,528
1976-1995							
BY	5.60% *	7.61% *	24.28% *	21.73%	19.24%	16.88%	13.53%
FU	8.50% *	9.54% *	32.21% *	26.33%	26.93%	21.06% *	17.53%
CHANGE	2.90% *	1.93% *	7.94%	4.59% *	7.69%	4.18% *	4.00%
N	4,370	2,761	1,372	3,166	1,027	2,992	15,688

* indicates significance at the 0.05 level from those in active military duty